

Claims

1. Femoral component of an artificial hip joint (for an uncemented or cemented revision operation or primary operation) characterized by the following elements:

the stem is made of one or more pieces,

the stem comprises a dorsolateral cylindrical component that is aligned axially relative to the intermedullary canal and that may be solid or hollow and can be connected rigidly or removably with a single- or multiple-piece anatomical metaphysial segment that is constructed in a conical, medially eccentric shape,

the proximal metaphysial component that holds the cone for the central or eccentric head mount by means of a shaft-cone transition (shoulder).

2. The femoral component of claim (1), configured such that the cylindrical component, as a continuous design axis on the dorsal side eccentrically accommodates the metaphysial components, which are kidney-shaped when seen in cross section, by means of a complete or unclosed hole, and said metaphysial components are comprised of one or more pieces.

3. The femoral component of claims (1) and (2), designed such that the femur stem axis coincides with the femur canal axis, and in the frontal plane the collum-centrum axis forms an angle with the diaphysial axis (CCD angle) of between 125° and 145° , as a rule 135° , and in the axial top view has an angle between the diaphysis and the screw neck axis - the "antetorsion angle" of between 5° and 15° , as a rule 7° .

4. The femoral component of claims (1) to (3), designed such that the ventral surface is curved in a convex manner in the axial aspect and is curved in a concave manner in the ventral aspect, such that the center of curvature is in the ventral position and the radius of curvature decreases continuously in the proximal direction (parabola).

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5. The femoral component of claims (1) to (4), designed such that the medial outer surface is curved in an convex manner in the axial aspect and, along the medial contour, is curved in a concave shape, in such a way that the center point of outer wall curvature is medial, and its radius decreases continuously in the proximal direction (parabola).

6. The femoral component of claims (1) to (5), designed such that the dorsal outer surface of the stem has a convex-concave-convex curvature moving around the axis proximally from lateral to medial in the form of a breaking wave or a rounded "3" having asymmetric halves and a round transition.

7. The femoral component of claims (1) to (6), constructed such that the lateral outer surface is designed to protrude in a substantially linear, cylindrical or conical shape in the proximal direction, or to protrude in a cylindrical shape in the lateral direction.

8. The femoral component of claims (1) to (7), embodied such that the ventral surface and/or medial surface and/or dorsal surface and/or lateral surface is/are structured by means of coaxially aligned longitudinal ribs.

9. The femoral component of claims (1) to (8), designed such that the stem makes a transition via a shoulder component (head-neck-stem-transition) to the cone, which, as a modular system, can accommodate various heads in centered or eccentric positions, and which may have a central hole for accommodating a tension anchor.

10. The femoral component of claims (1) to (9), constructed such that the cone has a hole drilled through it axially, coaxially, or at an angle for accommodating a tension anchor or tension screw, or the shoulder has additional holes for accommodating additional tension anchors

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having wires or cables and/or thrust/tension rods and/or tension screws.

11. The femoral component of claims (1) to (10), constructed such that the cone is oriented between 2° and 9° , as a rule 5° , in such a way that the CCD angle does not change and the offset also remains unchanged, however the axis of the cone projects into the laterodorsal circumference of the compact femur 2-4 cm below the tuberculum innominatum.

12. The shoulder component of claim (10), constructed such that in a plurality of levels holes are provided for accommodating tension anchors to the dorsal, lateral, and ventral femur wall.

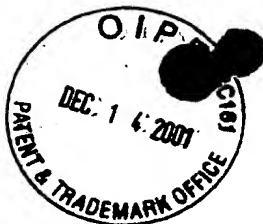
13. The metaphysial component of claims (10) to (12), constructed such that in a plurality of levels holes are provided for accommodating tension anchors to the dorsal, lateral and ventral femur wall.

14. The femoral component of claims (1) to (13), constructed such that the implant is made of titanium, tantalum, CoCrMo, or an alloy of titanium, tantalum, or of stainless steel.

15. The femoral component of claims (1) to (14), constructed such that the surface of the proximal half has a roughness of 50-250 μm , preferably 80-150 μm .

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Summary

The invention relates to a shaft prosthesis having a modular system that is anchored in the proximal cement cavity by means of a conically axial tension anchor. The stem segments and base segments may be of various lengths.

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Modular Revision Prosthesis

- Fig. 01 NPS modular system projected into a femur
- Fig. 01/100 Stem segments
- Fig. 01/100.1 Metaphysial segment
- Fig. 01/100.2 Diaphysial center segment
- Fig. 01/100.3 Base segment
- Fig. 01/101 Offset = intermedullary canal axis center of rotation
- Fig. 01/102 Tip of the base segment
- Fig. 01/103 Axial cylinder of the base segment
- Fig. 01/105 Contact surface of segments (base segment and stem segment)
- Fig. 01/106 Hole in stem segment
- Fig. 01/110 Access hole
- Fig. 01/130 Intermedullary canal axis
- Fig. 01/200 Shoulder of prosthesis
- Fig. 01/300 Cone of prosthesis
- Fig. 01/50 Thrust anchor
- Fig. 01/51 Screw head
- Fig. 01/54 Washer
- Fig. 01/55 Cone nut
- Fig. 01/60 Tension anchor screw
- Fig. 01/70 Tension anchor
- Fig. 01/71 Hole in the shoulder of the prosthesis for tension anchor
- Fig. 02
- Fig. 02/104 Transition segment between the lateral portion and the medial portion of the prosthesis cross section in the metaphysial segment
- Fig. 02/108 Convex-concave-convex curvature of the dorsal outer surface
- Fig. 02/109 Metaphysial segment, lateral portion
- Fig. 02/110 Metaphysial segment, medial portion
- Fig. 02/111 Convex curvature of ventral outer surface
- Fig. 02/112 Hole along the channel axis in the lateral segment
- Fig. 02/113 Thrust anchor hole
- Fig. 03 NPS modular system projected into a femur
- Fig. 03/100 Stem segments

00919179-121401

Fig. 03/100.1 Metaphysial segment

Fig. 03/100.2 Diaphysial center section

Fig. 03/100.3 Base segment

Fig. 03/101 Offset = intermedullary canal axis center of rotation

Fig. 03/102 Tip of the base segment

Fig. 03/103 Axial cylinder of the base segment

Fig. 03/105 Contact surface of segments (base segment and stem segment)

Fig. 03/106 Hole in stem segment

Fig. 03/110 Access hole

Fig. 03/130 Intermedullary canal axis

Fig. 03/200 Shoulder of prosthesis

Fig. 03/300 Cone of prosthesis

Fig. 03/50 Thrust anchor

Fig. 03/51 Screw head

Fig. 03/54 Washer

Fig. 03/55 Cone nut

Fig. 03/60 Tension anchor screw

Fig. 03/70 Tension anchor

Fig. 03/71 Hole in the should of the prosthesis for the tension anchor

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